

INDIAN MARINE MAMMALS

FIELD GUIDE FOR IDENTIFICATION

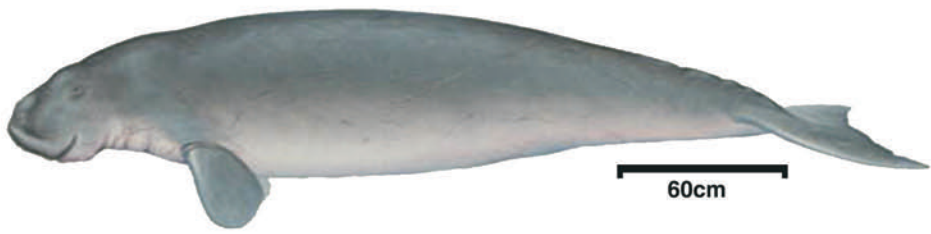


CENTRAL MARINE FISHERIES RESEARCH INSTITUTE (ICAR), KOCHI

January 2010



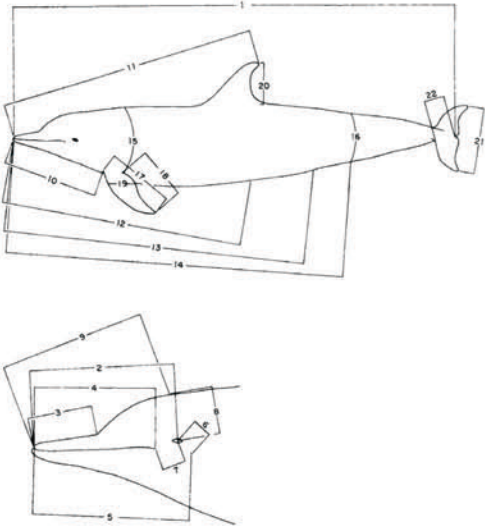
Dugong *Dugong dugon* (Müller, 1776)



Body shape – streamlined, smooth, fusiform
Head – downward deflection to muzzle which ends in a rostral disk with short dense bristles, valve like nostrils situated on top and front of animal's snout, small eyes, no external ear flaps.
Throat grooves – a pair, V- shaped
Flipper – paddle shaped, no nails
Dorsal fin – absent
Tail stock – laterally compressed in to a peduncle, whale- like fluke with median notch
Body colour – brownish to slate gray dorsally, slightly lighter ventrally
Teeth – upper jaw: 8 pairs; lower jaw: 10 pairs
Maximum size – adult 3.3m, newborn 1-1.5m
Maximum weight – 400 kg

CMFRI

Diagrammatic sketches for measuring cetacean morphometric characteristics



1. Length, total (tip of upper jaw to deepest part of notch between flukes).
2. Length, tip of upper jaw to center of eye.
3. Length, tip of upper jaw to apex of melon (snout length).
4. Length of gape (tip of upper jaw to angle of gape).
5. Length, tip of upper jaw to external auditory meatus.
6. Centre of eye to external auditory meatus (direct).
7. Centre of eye to angle of gape (direct).
8. Centre of eye to center of blowhole (direct).
9. Length, tip of upper jaw to blowhole along midline.
10. Length, tip of upper jaw to anterior insertion of flipper.
11. Length, tip of upper jaw to tip of dorsal fin.
12. Length, tip of upper jaw to midpoint of umbilicus.
13. Length, tip of upper jaw to midpoint of genital aperture.
14. Length, tip of upper jaw to center of anus.
15. Girth, on a transverse plane intersecting axilla.
16. Girth, on a transverse plane intersecting the anus.
17. Length, flipper (anterior insertion to tip).
18. Length, flipper (axilla to tip).
19. Width, flipper (maximum).
20. Height, dorsal fin (fin tip to base).
21. Width, flukes (tip to tip). [referred to below as "span of flukes"]
22. Distance from nearest point on anterior border of flukes to notch [referred to below as "width of fluke"]

Source: Perrin (1975)

CMFRI

Cuvier's beaked whale *Ziphius cavirostris* (G.Cuvier, 1823)



Body shape – slender but relatively robust than other beaked whales
Head – short and poorly defined beak, smoothly sloping forehead, slight concavity on top of head
Throat grooves – a pair, V- shaped
Flipper – small and rounded, flipper pockets on body
Dorsal fin – small and falcate, set about 2/3rd of way back from snout tip
Flukes – relatively large, fluke notch rare
Body colour – dark gray to light rusty brown with lighter areas around head and belly; dark colouration around eyes; white linear scratches and circular or oval marks in adults; orangish-yellow films on body
Blow – low and diffuse, directed slightly forward
Teeth – single pair, forward pointing at the tip of lower jaw
Maximum size – adult 6m, newborn 2.7m
Maximum weight – 3 t

CMFRI

Killer whale *Orcinus orca* (Linnaeus, 1758)



Body shape – robust, somewhat spindle shaped
Head – blunt snout, very short and poorly defined beak
Flipper – large, oval, blunt tips, up to 2m
Dorsal fin – tall 0.9m (females), 1.8m (males); erect or triangular (males); falcate with pointed or rounded tip (females and calves)
Fluke – broad, straight/slightly convex trailing edge
Body colour – tip of lower jaw to urogenital area and undersides of flukes are white; white lobes extend up the sides behind the dorsal fin; white oval patch above and behind eyes; a light gray saddle patch behind dorsal fin; rest of the body black
Teeth – 10-14 pairs /jaw, large, slightly recurved
Maximum size – adult 8m, newborn 2.1-2.6m
Maximum weight – 10 t

CMFRI

Melon-headed whale *Peponocephala electra* (Gray, 1846)



Body shape- moderately robust
Head- more triangular and sharply pointed bulbous head. Head of adult is more bulbous and younger animals have more sloping head
Flipper- Sickle shaped and pointed tips. Generally male has longer flipper
Dorsal fin- Tall and slightly falcate and located near the middle of the back. Male has taller dorsal fin
Body colour- Charcoal gray to black with a white urogenital patch; anchor shaped patch of light colour on the under side of the head; lip and tip of the lower jaw of the larger animal are light gray or white
Teeth- 20-25 slender teeth
Maximum size- 2.5m
Maximum weight -275 kg

CMFRI

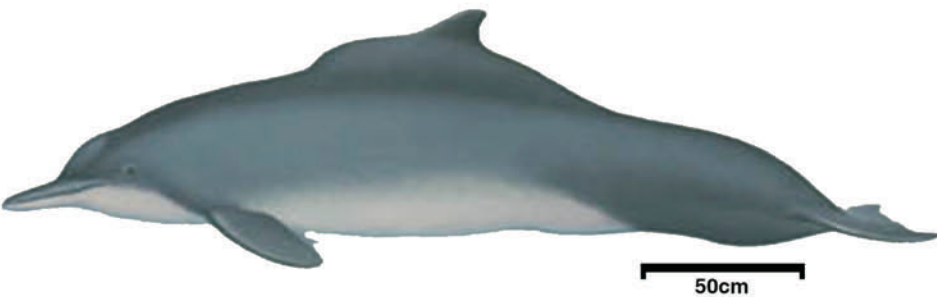
Spinner dolphin *Stenella longirostris* (Gray, 1828)



Body shape – slender
Head – very slender at the apex of melon, extremely long thin beak
Flipper – slender and recurved
Dorsal fin – ranges from slightly falcate to erect and triangular
Body colour – dark eye to flipper stripe and dark lips and beak tips, dark gray cape, light gray sides and white belly; upper beak is dark and most of the lower jaw is white
Teeth – 40-62 pairs in each jaw, fine and pointed
Maximum size – adult 1.8 m, newborn- 75-80 cm
Maximum weight – 82 kg

CMFRI

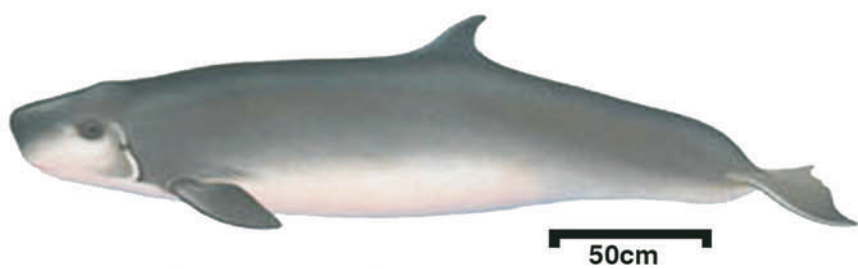
Indo-Pacific humpback dolphin *Sousa chinensis* (Osbeck, 1765)



Body shape – robust
Head – long and well-defined beak distinctly set off from the rounded melon, but not by a distinct crease
Dorsal fin – small and wide based, sits on a hump or ridge in the middle of the animal's back
Body colour – Light colored calves darken with age to become dark lead gray above and light gray below as adults (sometimes with white scarring around the dorsal fin and hump)
Teeth – 31-39 pairs in upper jaw and 29-38 pairs in lower jaw
Maximum size – adult 2.5m, newborn 1m
Maximum weight – 280 kg

CMFRI

Dwarf sperm whale *Kogia sima* (Owen, 1866)



Body shape – robust, tapers rapidly behind the dorsal fin
Head – triangular/squarish head, narrow underslung lower jaw; shark - like appearance
Throat grooves – a pair of short grooves
Flipper – small, positioned near head, somewhat blunt tips
Dorsal fin – large, set near middle of back and tip usually at the highest point
Body colour – brownish gray dorsally and white ventrally, white bracket marking on the side of head, dark ring surrounding the eyes, belly with a pinkish tinge
Teeth – extremely sharp, fang-like, 7-12 pairs in lower jaw; sometimes up to 3 pairs in upper jaw
Maximum size – adult 2.7m, newborn 1m
Maximum weight –272 kg

CMFRI

Short-finned pilot whale *Globicephala macrorhynchus* Gray, 1846



Head – bulbous, upsloping mouthlines, extremely short/non-existent beak
Flipper – long (14-19% of body length), sickle- shaped
Dorsal fin – situated about 1/3rd of way back from head, low, falcate, wide base
Body colour – black/dark brownish-gray, calves paler
Teeth – 7-9 pairs, short, sharply pointed
Maximum size – adult 5m, newborn 1.4-1.9m
Maximum weight – 3.6 t

CMFRI

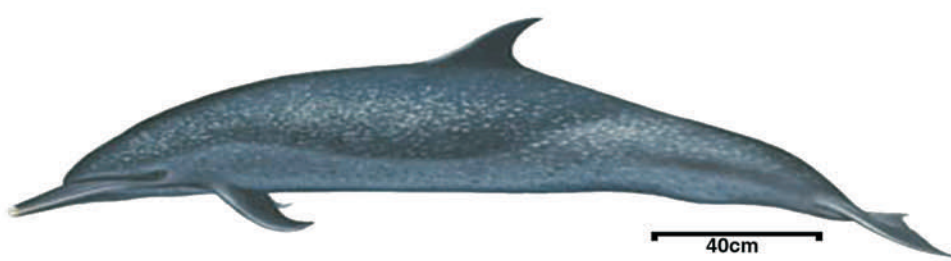
Risso's dolphin *Grampus griseus* (G. Cuvier, 1812)



Body shape – robust
Head – blunt, no distinct beak, vertical crease on front of melon, upsloping mouthline
Flipper – long, pointed, recurved
Dorsal fin – tall, slender, somewhat falcate, pointed at tip
Tail stock – very shallow, especially in front of fluke
Body colour – dark gray to nearly white, covered with white scratches, spots and blotches, young ones relatively unmarked
Teeth – lower jaw: 2-7pairs, stout, pointed; upper jaw: none/ occasionally 1-2 pairs
Maximum size – adult 3.8m, newborn 1.1-1.5m
Maximum weight – 0.5 t

CMFRI

Pantropical spotted dolphin *Stenella attenuata* (Gray, 1846)



Body shape – fairly slender
Head – long slender beak separated from melon by a distinct crease
Flipper – slender and strongly curved
Dorsal fin – very narrow, falcate and pointed at tips
Body colour – dark dorsal cape, which is high above the flipper and sweeps very low on the side below the dorsal fin; white mottling on dark cape especially in adults; lower sides and belly of adults are gray and lips and beak tip brilliant white; dark gray band encircles the eye and extends to apex of melon; a dark gape to flipper stripe
Teeth – 34-48 pairs in each jaw
Maximum size – adult 2.1m, newborn 80-85 cms
Maximum weight – 119 kg

CMFRI

Blue whale *Balaenoptera musculus* (Linnaeus, 1758)



Body shape- slender and streamlined
Head – broad, U-shaped from above and flat from side
Rostrum – single prominent ridge along center which ends in splash guard around blow hole
Flippers – long, pointed
Dorsal fin – relatively small, variably shaped, placed about ¾ th of way back from rostrum tip
Flukes – broad, tapered, smooth trailing edge, prominent median notch
Body colour – bluish gray dorsally, lighter underneath; head uniformly blue, back and sides – mottled blue and light gray
Throat grooves – 60-80 extending to or near to navel
Baleen plates – 260 – 400 pairs, black, broad based, <1m long
Maximum size – adult 24m, new born 7-8m
Maximum weight – 180 t

CMFRI

Bryde's whale *Balaenoptera edeni* Anderson, 1879



Body shape- streamlined and sleek
Head – somewhat pointed from above, makes up 25% of body length
Rostrum – 3 prominent ridges
Dorsal fin tall, falcate, rises abruptly from out of back, notched on trailing edge
Body colour – dark gray dorsally and lighter ventrally with pinkish tinge; upper jaw and lip typically dark
Throat grooves – 40-70, reach to or past the navel
Baleen plates – 250-370 pairs, gray plates with light gray fringes. up to 40 cm
Maximum size – adult 14m, newborn 4m
Maximum weight – 40 t

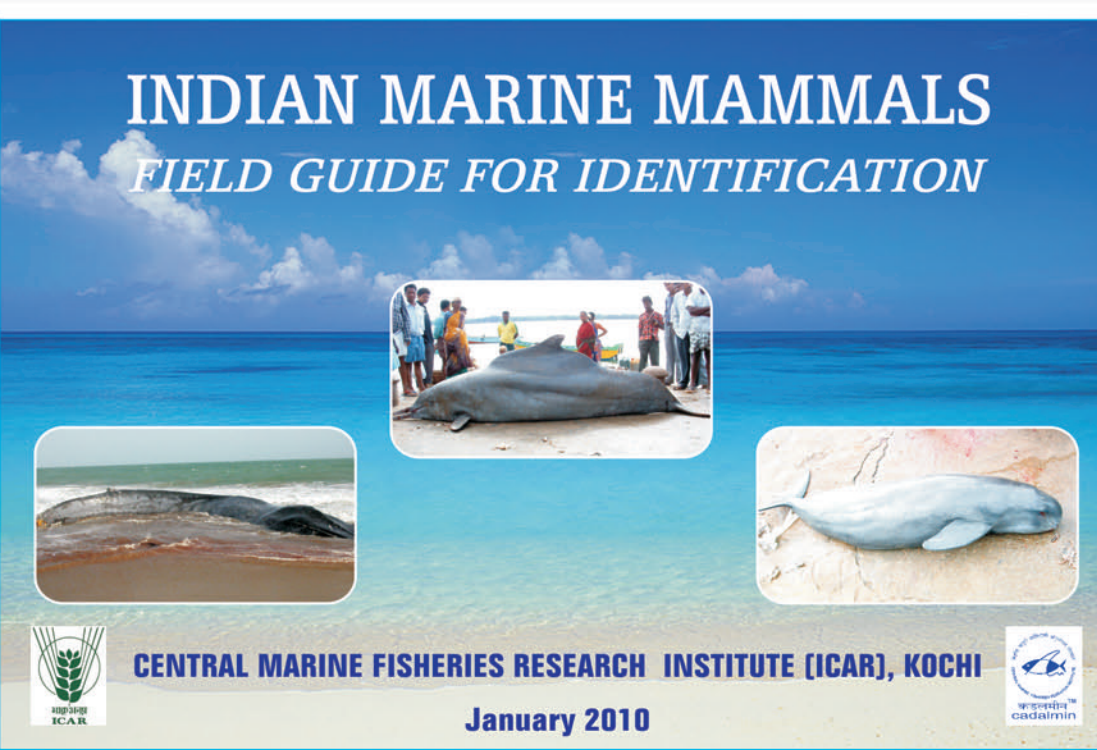
CMFRI

Humpback whale *Megaptera novaeangliae* (Borowski, 1781)



Body shape- more robust
Head – single low median ridge lined with a series of tubercles; tubercles more prominent near the lips and chin
Flippers – up to 1/3rd of body length, white ventrally and white to black dorsally
Dorsal fin – located ~ 2/3rd of way back from rostrum tip, low and broad-based
Flukes – with serrated trailing edge, white to black ventrally
Body colour – black/dark gray dorsally and white ventrally
Throat grooves – 14-35, extending back to navel or beyond
Baleen plates – 270-400 pairs, black to olive
Maximum size – adult 17m, newborn 4.3m
Maximum weight – 40 t

CMFRI



Conservation of marine mammals is receiving attention in many parts of the world. In India, all marine mammals are protected in India under the Wildlife (Protection) Act, 1972. Three species namely Gangetic dolphin, Irrawaddy dolphin and dugong, which need strict protection, are listed in Schedule I. All other cetaceans are listed in Schedule II (Part II). Hunting, poaching and trading of any marine mammal species specified in Schedule I and II are punishable under the Wildlife (Protection) Act. In addition to several other causes, cetaceans are often caught incidentally in fishing gear and carcasses are beach-cast. With increasing fishing activity in the Indian EEZ, the interaction between fishing gear and marine mammals has increased in the last few years. Identification of carcasses is essential to recognize the species that are vulnerable to fishing. The purpose of this field guide is to identify the species of beach-cast and stranded marine mammals following morphometric characteristics. The diagrammatic sketches of six species of whales, 17 dolphins, one porpoise and one dugong, which are known to occur in the Indian EEZ, are given. It is expected that this guide will be useful to the interested researchers and all those concerned with marine mammal conservation.

Cover photos
Left: *Balaenoptera musculus* at Mandapam (Tamil Nadu); Middle: *Sousa chinensis* at Gangoli (Karnataka); Right: *Neophocaena phocaenoides* at Malpe (Karnataka)

Fin whale *Balaenoptera physalus* (Linnaeus, 1758))



Body shape- sleek and streamlined
Head – pointed, V-shaped
Rostrum – single medial ridge on upper surface
Flippers – long, tapered
Dorsal fin –tall, falcate and set farther forward on the tail stock than in blue whale, rises at a shallow angle from the animal’s back
Flukes – prominent ridge along tail stock between dorsal fin and flukes
Body colour – black/dark brownish gray above and sides shading to white below; head colour asymmetrical; left lower jaw mostly dark and right jaw largely white; several light gray V-shaped chevrons on the back behind the head; light coloured streaks or swirls extending up from belly; flukes-white below and gray border
Throat grooves – 50-100 reaching to umbilicus
Baleen plates – 260 – 480 pairs, dark gray to black
Maximum size – adult 22m, new born 6-6.5m
Maximum weight – 120 t

Minke whale *Balaenoptera acutorostrata* Lacépède, 1804



Body shape- sleek
Head – sharply pointed and V-shaped
Rostrum – prominent ridge
Flippers – narrow with pointed tips, with a brilliant white patch
Dorsal fin – tall, recurved, located about two-third of way back from snout tip
Body colour – dark gray dorsally and white beneath with streaks/lobes of intermediate shades on sides
Throat grooves – 50-70, extending just past the flippers
Baleen plates – 231-285, white to cream colored
Maximum size – adult 8m, newborn 2-2.8m
Maximum weight – 9.2 t

CMFRI

CMFRI

CMFRI

Sperm whale *Physeter macrocephalus* Linnaeus, 1758



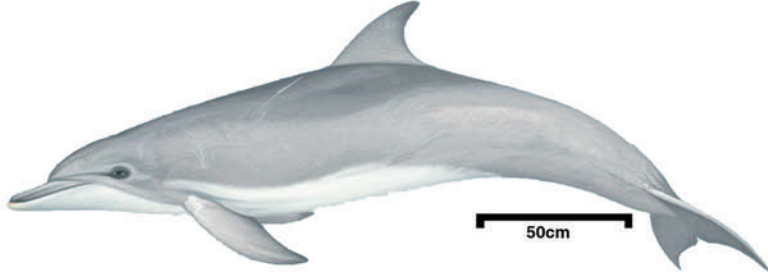
Body shape- laterally compressed
Head – 1/3rd of total length, squarish from side, much narrower lower jaw, S- shaped blowhole at front
Throat grooves – 2-10, short
Flipper – short, wide and spatulate
Dorsal fin – thick, low, rounded dorsal hump and a series of crenulations
Flukes – broad, triangular, rounded tips and deep notch
Body colour – black to brownish gray
Teeth – 18-26 pairs in lower jaw only; sharply pointed (young ones) to rounded stumps (adult)
Maximum size – adult 17m, newborn 3.5m - 4.5m
Maximum weight – 57 t

False killer whale *Pseudorca crassidens* (Owen, 1846)



Shape – long, slender, cigar shaped
Head – rounded overhanging melon, no discernable beak
Flipper – rounded tip, hump on leading edge, S-shaped
Dorsal fin – falcate, slender, somewhat rounded at tip, located near midpoint of back
Body colour – dark gray to black
Teeth – 7-12 pairs, large, conical
Maximum size – adult 5m, newborn 1.5-2.1m
Maximum weight – 2 t

Indo-Pacific bottlenose dolphin *Tursiops aduncus* (Ehrenberg, 1833)



Body shape – robust
Head – moderate length; beak melon less convex
Flipper – recurved with acutely rounded tips
Dorsal fin – tall and slightly falcate
Body colour – somewhat lighter and less countershaded; belly off-white to pale gray and grade smoothly to darker gray on lateral and dorsal surfaces; prominent black spots or flecks on bellies of adults; dark ring around eye
Teeth – 21-29 pairs in each jaw
Maximum size – adult 2.7m, newborn 85-112cm
Maximum weight – 230 kg

CMFRI

CMFRI

CMFRI

Striped dolphin *Stenella coeruleoalba* (Meyen, 1833)



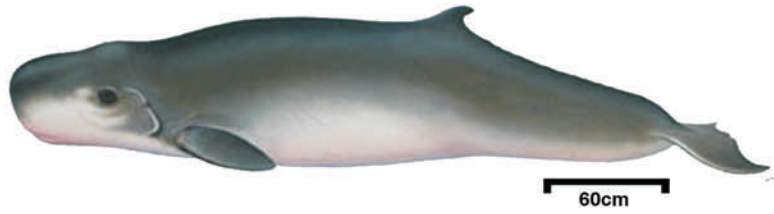
Body shape – more robust than spinner and spotted dolphins
Head – moderate beak length; a distinct crease between melon and beak
Flipper – recurved and pointed
Dorsal fin – tall and falcate
Tail stock – flukes with slender blades and acutely rounded tips
Body colour – white/pinkish belly separated from dark gray dorsal cape by a light gray thorax; a light gray spinal blaze extends from the thoracic area into the cape to just under the dorsal fin; the mostly black beak sends back a dark stripe, which encircles the eye and then widens and run back to the anus; there is an eye to flipper stripe and usually a short accessory stripe between the other two; appendages are dark gray to black
Teeth – 40-50 pairs/jaw, slender, pointed
Maximum size – adult 2.4m, newborn 93-100cm
Maximum weight – 156 kg

Longbeak common dolphin *Delphinus capensis* Gray, 1828



Body shape – slender
Head – long beak (9.7% of total length), somewhat flat appearance to melon, which rises from the rostrum at a relatively low angle; deep crease between melon and beak.
Flipper – recurved and pointed at tips
Dorsal fin – tall, slightly falcate
Body colour – hourglass pattern on side forming a V below dorsal fin; black/dark gray cape less distinct from thoracic; flipper to anus stripe moderately to strongly developed; chin to flipper stripe fuses with lip patch at or just anterior to the gape and remains relatively wide ahead of the eye
Teeth – 47-67 pairs/jaw, sharp, pointed
Maximum size – adult 2.4m, newborn- 80-100cm
Maximum weight – 235 kg

Pygmy sperm whale *Kogia breviceps* (Blainville, 1838)



Body shape – quite robust and not streamlined as other cetaceans, a hump on back between blowhole and dorsal fin
Head – shark- like with narrow underslung lower jaw, more squarish in older ones
Flipper – small, set forward near the head
Dorsal fin – small, strongly falcate, tip well below the highest point and set well behind the midpoint of the back
Body colour – dark brownish gray/black on back to white below; a dark patch encircling the eye; belly has a pinkish tone
Light coloured bracket mark along the side between eye and flipper
Teeth – long, sharp, fang-like, 12-16 pairs on lower jaw
Maximum size – adult 3.5m, newborn 1.2m
Maximum weight – 450 kg

CMFRI

CMFRI

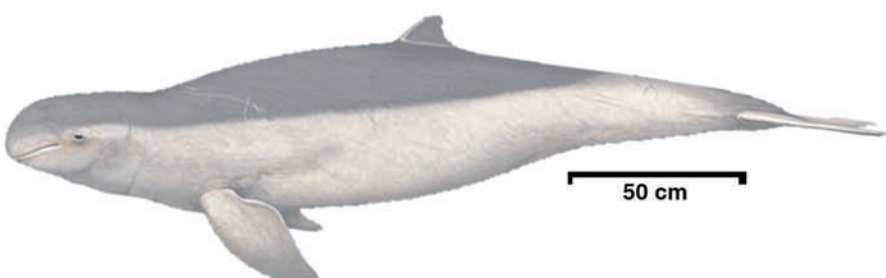
CMFRI

Longman's beaked whale *Indopacetus pacificus* (Longman, 1926)



Body shape – large, robust body
Head –moderately steep, bulging foreheads and moderate tube-beaks
Throat grooves – a pair of V-shaped grooves on the throat
Flipper – small, blunt flipper, fit into flipper pockets
Dorsal fin – fairly large falcate fins that resembles dolphin's dorsal fin, located behind the midpoint of the back
Flukes – broad with straight trailing edges
Body colour – umber brown to bluish gray on dorsal side generally with light area on the side and around the head. These light areas are often separated by diffuse dark band
Teeth – single pair of oval teeth at the tip of the lower jaw
Maximum size – adult 6m, newborn 2.9m
Maximum weight –272 kg

Irrawaddy dolphin *Orcaella brevirostris* (Owen in Gray, 1866)



Body shape – moderately robust, a distinct dorsal groove from neck region to just before the dorsal fin, U-shaped blowhole open towards front
Head – blunt, bulbous, no beak, straight mouthline, indistinct neck crease
Flipper – paddle shaped, curved leading edges and rounded tips
Dorsal fin – small, rounded and set just behind mid-back
Body colour – back and sides gray to bluish gray, lighter belly
Teeth – Upper jaw: 8-19 pairs, lower jaw: 11-18 pairs, slightly expanded crown
Maximum size – adult 2.4m, newborn 1m
Maximum weight – 115-130 kg

Rough-toothed dolphin *Steno bredanensis* (G.Cuvier in Lesson, 1828)



Body shape – relatively robust
Head – long and conical, no demarcation between gently sloping melon and moderately long beak, somewhat reptilian appearance
Flipper – large, set farther back
Dorsal fin – prominent and slightly falcate
Body colour – dark gray narrow dorsal cape, light gray sides; white belly, lips and lower jaw; white scratches and spots
Teeth – 19-28pairs/jaw, stout with vertical wrinkles or ridges
Maximum size – adult 2.5m, newborn 1m
Maximum weight – 155 kg

CMFRI

CMFRI

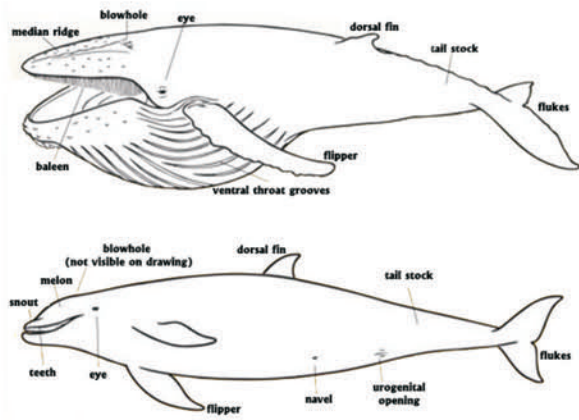
CMFRI

Finless porpoise *Neophocaena phocaenoides* (G.Cuvier, 1829)

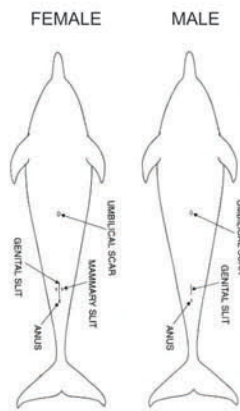


Body shape – small, slender
Head – rounded forehead rises steeply from the snout tip, beakless
Flipper – large, rounded tips
Dorsal fin – absent
Fluke – concave trailing edge
Body colour – gray, lighter areas on throat and around genitals
Teeth – 15-22 pairs/jaw, small, slender
Maximum size – adult 1.7m, newborn 75-85cm
Maximum weight – 32 kg

Cetacean morphological characters



Sex identification



CMFRI

CMFRI

CMFRI